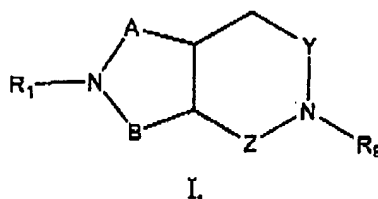


Page 5 of 20
USSN 10/810,999
6696.US.D1
Response to Office Action

CLAIM AMENDMENTS

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Claim 1. (Currently Amended) A compound of formula I



or pharmaceutically acceptable salts and ~~prodrugs~~ thereof, wherein

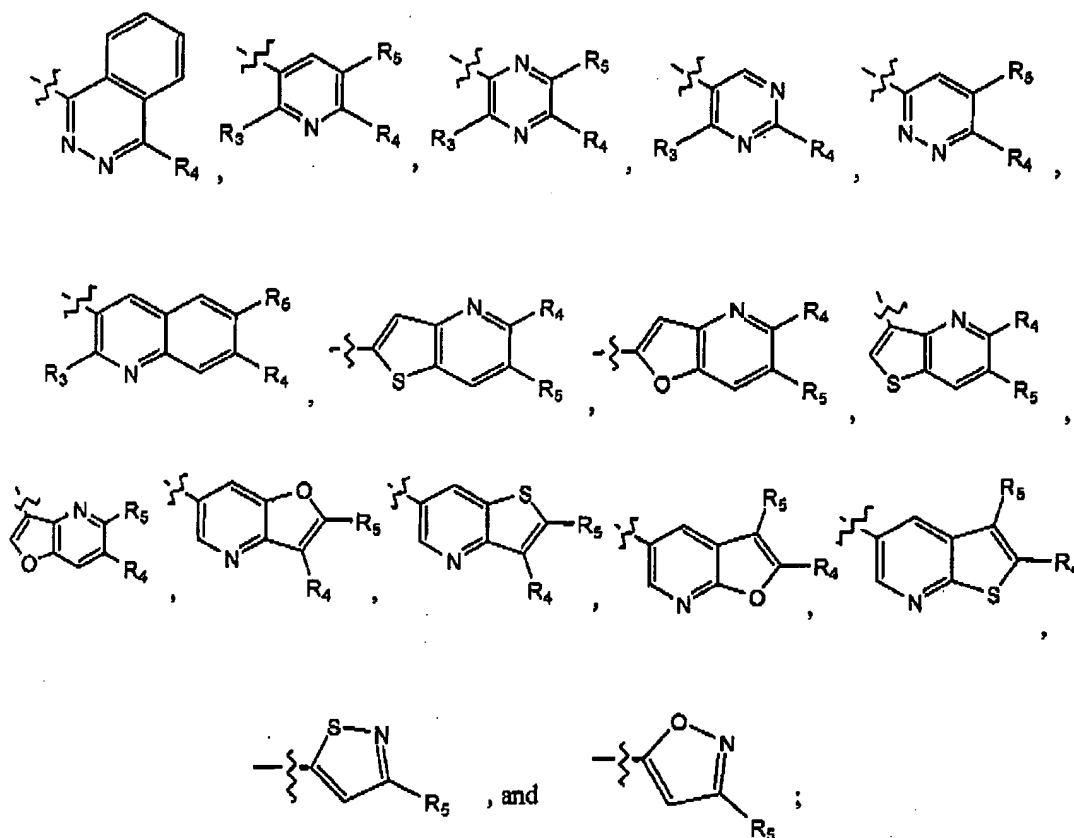
A is selected from the group consisting of a covalent bond, ~~CH₂~~, CH₂CH₂, and CH₂CH₂CH₂;

B is selected from the group consisting of CH₂ and CH₂CH₂, provided that when A is CH₂CH₂CH₂, then B is CH₂;

Y is selected from the group consisting of a covalent bond, CH₂, and CH₂CH₂;

Z is selected from the group consisting of a covalent bond, CH₂, and CH₂CH₂, provided that when Y is CH₂CH₂, then Z is a covalent bond and further provided that when Z is CH₂CH₂, then Y is a covalent bond;

R₁ is selected from the group consisting of



R_3 is selected from the group consisting of hydrogen, alkyl, and halogen;

R_4 is selected from the group consisting of hydrogen, alkoxy, alkyl, amino, halogen, and nitro;

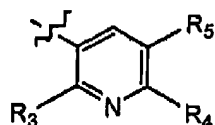
R_5 is selected from the group consisting of hydrogen, alkenyl, alkoxy, alkoxyalkoxy, alkoxyalkyl, alkoxyacetyl, alkoxyacetylalkyl, alkyl, alkylacetyl, alkylacetylalkyl, alkylthio, alkynyl, amino, aminoalkyl, aminocarbonyl, aminocarbonylalkyl, aminosulfonyl, carboxy, carboxyalkyl, cyano, cyanoalkyl, formyl, formylalkyl, haloalkoxy, haloalkyl, halogen, hydroxy, hydroxyalkyl, mercapto, mercaptoalkyl, nitro, 5-tetrazolyl, $-NR_6S(O)_2R_7$, $-C(NR_6)NR_7R_8$, $-CH_2C(NR_6)NR_7R_8$, $-C(NOR_6)R_7$, $-C(NCN)R_6$, $-C(NNR_6R_7)R_8$, $-S(O)_2OR_6$, and $-S(O)_2R_6$;

R_6 , R_7 , and R_8 are independently selected from the group consisting of hydrogen and alkyl; and

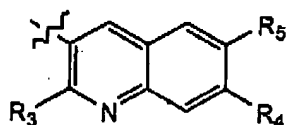
R_9 is selected from the group consisting of hydrogen, alkoxyacetyl, alkyl, amino, aminoalkyl, aminocarbonylalkyl, benzyloxycarbonyl, cyanoalkyl, dihydro-3-pyridinylcarbonyl, hydroxy, hydroxyalkyl, and phenoxyacetyl.

Claim 2. (Original) A compound according to claim 1 wherein

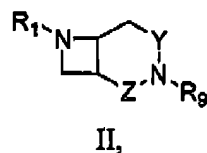
R_1 is selected from the group consisting of



and



Claim 3. (Withdrawn) A compound according to claim 1 of formula II



II,

or pharmaceutically acceptable salts and prodrugs thereof.

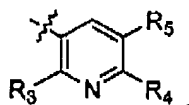
Claim 4. (Withdrawn) A compound according to claim 3 wherein Y is a covalent bond and Z is CH_2 .

Claim 5. (Withdrawn) A compound according to claim 3 wherein

Y is a covalent bond;

Z is CH_2 ; and

R_1 is



Claim 6. (Withdrawn) A compound according to claim 5 selected from the group consisting of

- (cis)-6-(3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
- (cis)-6-(6-chloro-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
- (1R,5S)-6-(3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
- (1R,5S)-6-(5-bromo-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
- (1S,5R)-6-(6-chloro-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
- (1S,5R)-6-(3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
- (1R,5S)-6-(6-chloro-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
- (1S,5R)-6-(5-ethynyl-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
- (1S,5R)-6-(5-vinyl-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
- 5-[(1S,5R)-3,6-diazabicyclo[3.2.0]hept-6-yl]nicotinonitrile;
- (-) (cis)-6-(5-bromo-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
- (cis)-6-(5-bromo-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
- (1S,5R)-6-(6-bromo-5-vinyl-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
- 2-bromo-5-[(1R,5S)-3,6-diazabicyclo[3.2.0]hept-6-yl]nicotinonitrile;
- (1R,5S)-6-(5-ethynyl-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
- (1R,5S)-6-(5,6-dichloro-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
- (1S,5R)-6-(5,6-dichloro-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
- (cis)-6-(5,6-dichloro-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
- (1R,5S)-6-(5-methoxy-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
- (1S,5R)-6-(5-methoxy-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
- (cis)-6-(6-bromo-5-methoxy-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
- (1R,5S)-6-(6-chloro-5-methyl-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
- (1S,5R)-6-(6-chloro-5-methyl-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;

(cis)-6-(6-chloro-5-methyl-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
(1R,5S)-6-(6-bromo-5-methoxy-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
(1S,5R)-6-(6-bromo-5-methoxy-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
(cis)-6-(5-azido-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane;
(1R,5S)-6-(5-azido-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane; and
(1R,5S)-6-(5-azido-3-pyridinyl)-3,6-diazabicyclo[3.2.0]heptane.

Claim 7. (Withdrawn) A compound according to claim 5 that is 5-[(1R,5S)-3,6-diazabicyclo[3.2.0]hept-6-yl]nicotinonitrile.

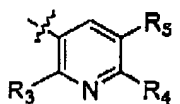
Claim 8. (Withdrawn) A compound according to claim 3 wherein Y is CH₂ and Z is a covalent bond.

Claim 9. (Withdrawn) A compound according to claim 3 wherein

Y is CH₂;

Z is a covalent bond; and

R₁ is



Claim 10. (Withdrawn) A compound according to claim 9 selected from the group consisting of

(1R,5R)-6-(6-chloro-3-pyridinyl)-2,6-diazabicyclo[3.2.0]heptane and
(1R,5R)-6-(3-pyridinyl)-2,6-diazabicyclo[3.2.0]heptane.

Claim 11. (Withdrawn) A compound according to claim 3 wherein Y is CH₂CH₂ and Z is a covalent bond.

Claim 12. (Withdrawn) A compound according to claim 3 wherein Y is CH₂ and Z is CH₂.

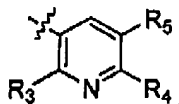
Claim 13. (Withdrawn) A compound according to claim 3 wherein Y is a covalent bond and Z is CH₂CH₂.

Claim 14. (Withdrawn) A compound according to claim 3 wherein

Y is a covalent bond;

Z is CH₂CH₂; and

R₁ is

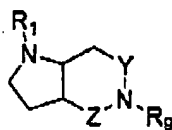


Claim 15. (Withdrawn) A compound according to claim 14 selected from the group consisting of

- (cis)-8-(3-pyridinyl)-3,8-diazabicyclo[4.2.0]octane;
- (cis)-8-(6-chloro-3-pyridinyl)-3,8-diazabicyclo[4.2.0]octane;
- (1S,6R)-(cis)-8-(6-chloro-3-pyridinyl)-3,8-diazabicyclo[4.2.0]octane;
- (-) (cis)-8-(6-chloro-3-pyridinyl)-3,8-diazabicyclo[4.2.0]octane;
- 5-[(1R,6S)-3,8-diazabicyclo[4.2.0]oct-8-yl]nicotinonitrile;
- (1S,6R)-5-[3,8-diazabicyclo[4.2.0]oct-8-yl]nicotinonitrile;
- (1S,6R)-8-(5-methoxy-3-pyridinyl)-3,8-diazabicyclo[4.2.0]octane;
- (cis)-8-(5-methoxy-3-pyridinyl)-3,8-diazabicyclo[4.2.0]octane;
- (1R,6S)-8-(5-methoxy-3-pyridinyl)-3,8-diazabicyclo[4.2.0]octane;
- (cis)-8-(6-chloro-5-methyl-3-pyridinyl)-3,8-diazabicyclo[4.2.0]octane;
- (1S,6R)-8-(6-chloro-5-methyl-3-pyridinyl)-3,8-diazabicyclo[4.2.0]octane;

(1R,6S)-8-(6-chloro-5-methyl-3-pyridinyl)-3,8-diazabicyclo[4.2.0]octane;
 (1S,6R)-8-(3-pyridinyl)-3,8-diazabicyclo[4.2.0]octane;
 (1R,6S)-8-(3-pyridinyl)-3,8-diazabicyclo[4.2.0]octane;
 (cis)-8-(5,6-dichloro-3-pyridinyl)-3,8-diazabicyclo[4.2.0]octane;
 (1S,6R)-8-(5,6-dichloro-3-pyridinyl)-3,8-diazabicyclo[4.2.0]octane; and
 (1R,6S)-8-(5,6-dichloro-3-pyridinyl)-3,8-diazabicyclo[4.2.0]octane.

Claim 16. (Currently Amended) A compound according to claim 1 of formula III



III,

or pharmaceutically acceptable salts and ~~prodrugs~~ thereof.

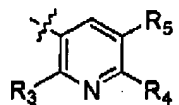
Claim 17. (Original) A compound according to claim 16 wherein
 Y is a covalent bond and Z is a covalent bond.

Claim 18. (Original) A compound according to claim 16 wherein

Y is a covalent bond;

Z is a covalent bond; and

R₁ is



Claim 19. (Original) A compound according to claim 18 that is (1R,5R)-2-(3-pyridinyl)-2,6-diazabicyclo[3.2.0]heptane.

Claim 20. (Original) A compound according to claim 16 wherein Y is CH₂ and Z is a covalent bond.

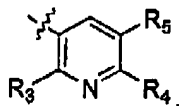
Claim 21. (Original) A compound according to claim 16 wherein Y is a covalent bond and Z is CH₂.

Claim 22. (Original) A compound according to claim 16 wherein

Y is a covalent bond;

Z is CH₂; and

R₁ is



Claim 23. (Original) A compound according to claim 22 selected from the group consisting of

- (cis)-1-(6-chloro-3-pyridinyl)octahydropyrrolo[3,4-b]pyrrole;
- (cis)-1-(6-chloro-3-pyridinyl)-5-methyloctahydropyrrolo[3,4-b]pyrrole;
- (3aR,6aR)-1-(6-chloro-3-pyridinyl)octahydropyrrolo[3,4-b]pyrrole;
- (3aR,6aR)-1-(3-pyridinyl)octahydropyrrolo[3,4-b]pyrrole;
- (3aS,6aS)-1-(6-chloro-3-pyridinyl)octahydropyrrolo[3,4-b]pyrrole;
- (3aS,6aS)-1-(3-pyridinyl)octahydropyrrolo[3,4-b]pyrrole;
- 5-((3aR,6aR)-hexahydropyrrolo[3,4-b]pyrrol-1(2H)-yl)nicotinonitrile;
- (3aS,6aS)-1-(5-hydroxy-3-pyridinyl)octahydropyrrolo[3,4-b]pyrrole; and
- 5-((3aS,6aS)-hexahydropyrrolo[3,4-b]pyrrol-1(2H)-yl)nicotinonitrile.

Page 13 of 20
USSN 10/810,999
6696.US.D1
Response to Office Action

Claim 24. (Original) A compound according to claim 16 wherein Y is CH_2CH_2 and Z is a covalent bond.

Claim 25. (Original) A compound according to claim 16 wherein Y is CH_2 and Z is CH_2 .

Claim 26. (Original) A compound according to claim 16 wherein Y is a covalent bond and Z is CH_2CH_2 .

Claim 27. (Canceled)

Claim 28. (Canceled)

Claim 29. (Canceled)

Claim 30. (Canceled)

Claim 31. (Canceled)

Claim 32. (Canceled)

Claim 33. (Canceled)

Claim 34. (Canceled)

Claim 35. (Canceled)

Page 14 of 20
USSN 10/810,999
6696.US.D1
Response to Office Action

Claim 36. (Canceled)

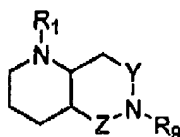
Claim 37. (Canceled)

Claim 38. (Canceled)

Claim 39. (Canceled)

Claim 40. (Canceled)

Claim 41. (Withdrawn) A compound according to claim 1 of formula V



V,

or pharmaceutically acceptable salts and prodrugs thereof.

Claim 42. (Withdrawn) A compound according to claim 41 wherein

Y is a covalent bond and Z is a covalent bond.

Claim 43. (Withdrawn) A compound according to claim 41 wherein Y is CH₂ and Z is a covalent bond.

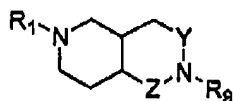
Claim 44. (Withdrawn) A compound according to claim 41 wherein Y is a covalent bond and Z is CH₂.

Claim 45. (Withdrawn) A compound according to claim 41 wherein Y is CH₂CH₂ and Z is a covalent bond.

Claim 46. (Withdrawn) A compound according to claim 41 wherein Y is CH₂ and Z is CH₂.

Claim 47. (Withdrawn) A compound according to claim 41 wherein Y is a covalent bond and Z is CH₂CH₂.

Claim 48. (Withdrawn) A compound according to claim 1 of formula VI



VI,

or pharmaceutically acceptable salts and prodrugs thereof.

Claim 49. (Withdrawn) A compound according to claim 48 wherein

Y is a covalent bond and Z is a covalent bond.

Claim 50. (Withdrawn) A compound according to claim 48 wherein Y is CH₂ and Z is a covalent bond.

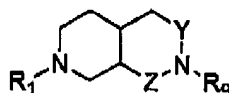
Claim 51. (Withdrawn) A compound according to claim 48 wherein Y is a covalent bond and Z is CH₂.

Claim 52. (Withdrawn) A compound according to claim 48 wherein Y is CH₂CH₂ and Z is a covalent bond.

Claim 53. (Withdrawn) A compound according to claim 48 wherein Y is CH₂ and Z is CH₂.

Claim 54. (Withdrawn) A compound according to claim 48 wherein Y is a covalent bond and Z is CH₂CH₂.

Claim 55. (Withdrawn) A compound according to claim 1 of formula VII



VII,

or pharmaceutically acceptable salts and prodrugs thereof.

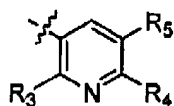
Claim 56. (Withdrawn) A compound according to claim 55 wherein
Y is a covalent bond and Z is a covalent bond.

Claim 57. (Withdrawn) A compound according to claim 55 wherein

Y is a covalent bond;

Z is a covalent bond; and

R₁ is



Claim 58. (Withdrawn) A compound according to claim 57 selected from the group consisting of

(cis)-3-(3-pyridinyl)-3,8-diazabicyclo[4.2.0]octane;

(cis)-3-(6-chloro-3-pyridinyl)-3,8-diazabicyclo[4.2.0]octane;

(1R,6S)-3-(6-chloro-3-pyridinyl)-3,8-diazabicyclo[4.2.0]octane; and

(cis)-5-[3,8-diazabicyclo[4.2.0]oct-3-yl]nicotinonitrile.

Page 17 of 20
USSN 10/810,999
6696.US.D1
Response to Office Action

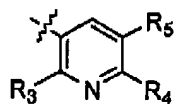
Claim 59. (Withdrawn) A compound according to claim 55 wherein Y is CH₂ and Z is a covalent bond.

Claim 60. (Withdrawn) A compound according to claim 55 wherein

Y is a covalent bond;

Z is a covalent bond; and

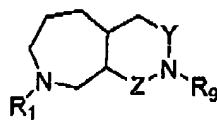
R₁ is



Claim 61. (Withdrawn) A compound according to claim 60 that is (cis)-6-(3-pyridinyl)octahydro-1H-pyrrolo[2,3-c]pyridine.

Claim 62. (Withdrawn) A compound according to claim 55 wherein Y is CH₂CH₂ and Z is a covalent bond.

Claim 63. (Withdrawn) A compound according to claim 1 of formula VIII



VIII,

or pharmaceutically acceptable salts and prodrugs thereof.

Claim 64. (Withdrawn) A compound according to claim 63 wherein

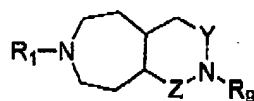
Y is a covalent bond and Z is a covalent bond.

Page 18 of 20
USSN 10/810,999
6696.US.D1
Response to Office Action

Claim 65. (Withdrawn) A compound according to claim 63 wherein Y is CH₂ and Z is a covalent bond.

Claim 66. (Withdrawn) A compound according to claim 63 wherein Y is a covalent bond and Z is CH₂.

Claim 67. (Withdrawn) A compound according to claim 1 of formula IX



IX,

or pharmaceutically acceptable salts and prodrugs thereof.

Claim 68. (Withdrawn) A compound according to claim 67 wherein

Y is a covalent bond and Z is a covalent bond.

Claim 69. (Withdrawn) A compound according to claim 67 wherein Y is CH₂ and Z is a covalent bond.

Claim 70. (Withdrawn) A compound according to claim 67 wherein Y is a covalent bond and Z is CH₂.

Claim 71. (Original) A pharmaceutical composition comprising a therapeutically effective amount of a compound of Claim 1 in combination with a pharmaceutically acceptable carrier.

Claim 72. (Canceled)

Claim 73. (Currently Amended) A method of treating a disorder ~~wherein the disorder is ameliorated by controlling neurotransmitter release in a host mammal in need of such~~

treatment, comprising administering a therapeutically effective amount of a compound of Claim 1, wherein the disorder is selected from the group consisting of Alzheimer's disease, Parkinson's disease, memory dysfunction, Tourette's syndrome, sleep disorders, attention deficit hyperactivity disorder, neurodegeneration, inflammation, neuroprotection, amyotrophic lateral sclerosis, anxiety depression, mania, schizophrenia, eating disorders, AIDS-induced dementia, epilepsy, urinary incontinence, Crohn's disease, migraines, pain, PMS, erectile dysfunction, substance abuse, smoking cessation, and inflammatory bowel syndrome.

Claim 74. (Original) The method of claim 73 wherein the disorder is selected from the group consisting of Alzheimer's disease, Parkinson's disease, attention deficit hyperactivity disorder, depression, nicotinic withdrawal syndrome, Tourette's syndrome, and schizophrenia.

Claim 75. (Original) The method of claim 73 wherein the disorder is pain.

Claim 76. (Original) A method of treating pain in a mammal comprising administering to a mammal in need of such treatment a therapeutically effective amount of a compound of Claim 1 in combination with a non-steroid anti-inflammatory agent and a pharmaceutically acceptable carrier.

Claim 77. (Original) A method of treating pain in a mammal comprising administering to a mammal in need of such treatment a therapeutically effective amount of a compound of Claim 1 in combination with an opioid and a pharmaceutically acceptable carrier.

Claim 78. (Original) A method of treating pain in a mammal comprising administering to a mammal in need of such treatment a therapeutically effective amount of a compound of Claim 1 in combination with a tricyclic antidepressant and a pharmaceutically acceptable carrier.

Claim 79. (Original) A method of treating pain in a mammal comprising administering to a mammal in need of such treatment a therapeutically effective amount of a compound of Claim 1 in combination with an anticonvulsant and a pharmaceutically acceptable carrier.

Page 20 of 20
USSN 10/810,999
6696.US.D1
Response to Office Action

Claim 80. (NEW) A compound that is (3aR,6aR)-1-(3-pyridinyl)octahydropyrrolo[3,4-b]pyrrole or a salt thereof.

Claim 81. (NEW) A pharmaceutical composition comprising a therapeutically effective amount of a compound of (3aR,6aR)-1-(3-pyridinyl)octahydropyrrolo[3,4-b]pyrrole in combination with a pharmaceutically acceptable carrier.

Claim 82. (NEW) A method of treating a disorder in a mammal in need of such treatment, comprising administering a therapeutically effective amount of (3aR,6aR)-1-(3-pyridinyl)octahydropyrrolo[3,4-b]pyrrole, wherein the disorder is selected from the group consisting of Alzheimer's disease, Parkinson's disease, memory dysfunction, Tourette's syndrome, sleep disorders, attention deficit hyperactivity disorder, neurodegeneration, inflammation, neuroprotection, amyotrophic lateral sclerosis, anxiety depression, mania, schizophrenia, eating disorders, AIDS-induced dementia, epilepsy, urinary incontinence, Crohn's disease, migraines, pain, PMS, erectile dysfunction, substance abuse, smoking cessation, and inflammatory bowel syndrome